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# Journal of the Society of Arts.

FRIDAY, JUNE 14, 1867.

## Announcements by the Council.

### ANNUAL CONFERENCE.

The Sixteenth Annual Conference between the Council and the Representatives of the Institutions in Union and Local Boards will be held on Wednesday next, the 19th June, at Twelve o'clock, noon. The Right Hon. HENRY AUSTIN BRUCE, M.P., will preside.

The Council will lay before the Conference the Secretary's Report of the Proceedings of the Union for the past year, and the Results of the Examinations, and the Programme of Examinations for 1868 will also be considered by the Conference.

The following suggestions of Subjects for Discussion have been received from various quarters, it being understood that in putting them forward the Council express no opinion whatever upon them :—

1. Whether the means at present available for the promotion of Primary Education are sufficient to qualify the working classes to take advantage of the Secondary Instruction offered by Institutes to Adults?

2. Whether provisions should be inserted in the Manchester Education Bill, now before Parliament, which would authorize grants to be made to Evening Schools and Classes?

3. Whether, considering the valuable results of the co-operation which the Royal Horticultural and Geographical Societies, and certain public companies, have afforded to the Society of Arts in extending the sphere of its Examinations, the like co-operation cannot be obtained from other societies and companies, especially from the Royal Agricultural and Botanical Societies?

4. Whether any additional means can be devised to induce the Institutions to form District Unions, with paid Visiting Officers, in connexion with the Society of Arts?

5. Whether additional interest in the Final Examinations might not be excited by the establishment of Special Prize Funds in the District Unions, to which Supplementary District Prizes might be added by the Society of Arts?

6. What means can be adopted by the Local Boards to secure a larger number (*a*) of Candidates from the Artizan Class at the Final Examinations, and (*b*) of Female Candidates at the Elementary and Final Examinations?

7. Whether it would be expedient to adopt, as far as possible, one specified text-book for each of the subjects in the Final Examinations?

8. Whether it would be expedient that the Society of Arts should decline to recognize an Elementary Certificate of any given year as a Pass to the Final Examinations of the same year?

9. Whether it is desirable, in the Elementary Examinations, to have one set of papers instead of two, as at

present, but with two grades of Certificates, according to the merit of the Candidates?

10. Whether, in order to secure uniformity in the Previous Examinations, the Society of Arts should furnish an Elementary Paper (distinct from the Ordinary Elementary Examinations) to meet the case of those Candidates who may not, in any previous year, have obtained Elementary Certificates?

11. Whether any steps can be taken by the Society of Arts, in order to prevail upon the Science and Art Department to grant Honorary Teachers' Certificates to those gentlemen who shall be recommended by any Public Educational Board?

12. How can the Institutions or District Unions assist the movement now being made by the Society of Arts to send selected Workmen to Examine and Report upon the Paris Exhibition?

Secretaries of Institutions and Local Boards are requested to send, immediately, the names of the Representatives appointed to attend the Conference, and early notice should be given of any other subjects which Institutions or Local Boards may desire their Representatives to introduce to the notice of the Conference.

As the subject of National Education is of peculiar interest at the present time, and several topics of great importance to the Institutions are proposed for discussion at the Conference, the Council hope that each Institution and Local Board will not fail to appoint one or more Representatives to express its views.

Secretaries of Institutions are requested to forward *at once* by book post, copies of the last Annual Reports of their Institutions.

### ARTIZANS' VISITS TO PARIS.

The Council of the Society of Arts, feeling the importance of promoting the intelligent study of the Paris Exhibition and the manufacturing establishments in France by artisans of the United Kingdom, have appointed a Committee in furtherance of this object, and on their recommendation, have passed the following minute :—

At the last and former International Exhibitions held in this country, arrangements were made by the French Government, to facilitate the visits of skilled artisans, and interesting reports on the exhibitions were made by them to their government. Believing that such visits on the part of skilled workmen to these great international displays not only exercise a beneficial influence upon the men themselves, but also upon the progress of industry in the country to which they belong, the Council of the Society of Arts have resolved to raise a fund to be employed, in aiding a limited number of English workmen to proceed to Paris for the purpose of studying the present French Exhibition.

To carry this object into effect, they have agreed on the following plan :—

1st. That a number of selected workmen (the number to depend on the amount of funds at the disposal of the Council) shall be assisted to proceed to and remain in Paris a sufficient time (say three weeks), for the purpose of making a careful study of the exhibition, and of such factories and workshops as they may desire to visit.

2nd. That every man so assisted shall, on his return, make a report to the Society of what he has observed during his stay, in reference to the special industry in

which he is engaged, and that it be made a condition of the grant to each man that one-third of the amount be retained until his report shall be supplied to the Society.

3rd. The Council think it will be undesirable to fix the exact time for, or to prescribe the duration of, these visits, or to interfere with any of the arrangements the men may desire to make for their own accommodation; but, in order that they may take advantage of the facilities provided by the Commission organised by the French Government for the study of the exhibition, the men will be placed in communication with that Commission on their arrival in Paris.

4th. A considerable sum will be required satisfactorily to accomplish the important object undertaken by the Society, and, in order to raise these funds, the Council have determined to appeal to the members of the Society, who must be interested in the successful results of this movement, in the belief that they will not hesitate to join in a subscription for the furtherance of the undertaking; and they propose at the same time to communicate with the various Chambers of Commerce, inviting their counsel and support. The Council have decided to commence the subscription by a vote of one hundred guineas from the funds of the Society.

Members are invited to aid the Council in this undertaking by subscriptions, which should be forwarded to the Financial Officer at the Society's house.

The following is the list of subscriptions up to the present date:—

|   |    |     |    |   |
|---|----|-----|----|---|
| H.R.H. the Prince of Wales, President               | .. | £31 | 10 | 0 |
| Society of Arts .. .. .                             | .. | 105 | 0  | 0 |
| Earl Granville, K.G. .. .                           | .. | 5   | 0  | 0 |
| Lord de L'Isle .. .. .                              | .. | 10  | 0  | 0 |
| Thomas Twining .. .. .                              | .. | 2   | 2  | 0 |
| Sir J. P. Boileau, Bart. ..                         | .. | 5   | 0  | 0 |
| George Godwin, F.R.S. ..                            | .. | 1   | 1  | 0 |
| Vice-Chancellor Sir W. Page Wood, F.R.S.            | .. | 10  | 0  | 0 |
| W. H. Bodkin (Assistant-Judge)                      | .. | 3   | 3  | 0 |
| Sir Rowland Hill, K.C.B. ..                         | .. | 3   | 3  | 0 |
| Benjamin Shaw .. .. .                               | .. | 2   | 2  | 0 |
| Alfred Davis .. .. .                                | .. | 10  | 10 | 0 |
| Eugène Rimmel .. .. .                               | .. | 5   | 5  | 0 |
| Frederick Mocatta .. .. .                           | .. | 2   | 2  | 0 |
| James Marshall .. .. .                              | .. | 2   | 2  | 0 |
| Robert Dawbarn .. .. .                              | .. | 1   | 0  | 0 |
| Henry Vaughan .. .. .                               | .. | 10  | 10 | 0 |
| Philip Sancton .. .. .                              | .. | 5   | 0  | 0 |
| Somerset A. Beaumont .. .                           | .. | 5   | 0  | 0 |
| G. Dixon, Mayor of Birmingham                       | .. | 5   | 5  | 0 |
| Messrs. Smith and Wright, Birmingham                | .. | 5   | 5  | 0 |
| Messrs. Griffiths and Browett, Birmingham           | .. | 5   | 5  | 0 |
| Henry Weiss, Birmingham ..                          | .. | 2   | 2  | 0 |
| W. H. M. Blews, Birmingham                          | .. | 2   | 2  | 0 |
| W. Middlemore, J.P., Birmingham                     | .. | 5   | 5  | 0 |
| Thomas Lloyd, Birmingham ..                         | .. | 2   | 2  | 0 |
| Messrs. Elkington and Mason, Birmingham             | .. | 5   | 5  | 0 |
| Messrs. John Hardman and Co., Birmingham            | .. | 2   | 2  | 0 |
| Messrs. J. and C. Osler, Birmingham                 | .. | 5   | 5  | 0 |
| The Proprietors of the <i>Birmingham Journal</i>    | .. |     |    |   |
| and <i>Daily Post</i> .. .. .                       | .. | 2   | 2  | 0 |
| The Proprietors of the <i>Birmingham Gazette</i> .. | .. | 2   | 2  | 0 |

A circular has been issued by the Birmingham Chamber of Commerce, "earnestly asking for the co-operation of manufacturers and others, believing it to be of the highest importance that the opportunity now afforded, by which the workmen of our town may be made acquainted with the productions of continental manufacturers, should not be lost," and inviting subscriptions.

## PRIZES FOR ART-WORKMEN.\*.

The Council of the Society of Arts hereby offer Prizes for Art-Workmanship, according to the following conditions:—

I. The works to be executed will be the property of the producers, but will be retained for exhibition, in London and elsewhere, for such length of time as the Council may think desirable.

II. The exhibitors are required to state in each case the price at which their works may be sold, or, if sold previously to exhibition, at what price they would be willing to produce a copy.

III. The awards in each class will be made, and the sums specified in each class will be paid, provided the works be considered of sufficient merit to deserve the payment; and, further, in cases of extraordinary merit additional awards will be given, accompanied with the medal of the Society.

IV. Before the award of prizes is confirmed, the candidates must be prepared to execute some piece of work sufficient to satisfy the Council of their competency.

V. *Bona-fide* Art-workmen only can receive prizes.

VI. Although great care will be taken of articles sent for exhibition, the Council will not be responsible for any accident or damage of any kind occurring at any time.

VII. Prices may be attached to articles exhibited and sales made, and no charge will be made in respect of any such sales.

VIII. All the prizes are open to male and female competitors, and in addition, as regards Painting on Porcelain, Cameo-cutting, Engraving on Glass, Decorative Painting, and Wall Mosaics, a second set of prizes, of the same amounts, will be awarded among female competitors. If a female desire to compete in the female class only, she must declare her intention accordingly. The originals of the works prescribed may be seen at the South Kensington Museum.

IX. Any producer will be at liberty to exhibit, either in his own name or through his workmen, any work or works as specimens of good workmanship, in the various classes, provided that the work or works be accompanied with a statement of the name or names of the artizans who executed their respective portions; and if the work or works be sufficiently meritorious, extra prizes will be given to the artizans who have executed them.

X. Artizans may, if they think fit, exhibit works executed by them after other designs than those stated above, in any of the classes. Such works may contain the whole or portions of the prescribed designs, and must be of a similar style and character. Competitors must specify the class in which they exhibit. If the works be sufficiently meritorious extra prizes will be awarded.

XI. All articles for competition must be sent in to the Society's house on or before Saturday, the 21st of December, 1867, and must be delivered free of all charges. Each work sent in competition for a Prize must be marked with the Art-workman's name, or, if preferred, with a cypher, accompanied by a sealed envelope giving the name and address of the Art-workman. With the articles, a description for insertion in the catalogue should be sent. The works will be exhibited at the Society's House, and afterwards at the South Kensington Museum.

Casts may be seen at the Society of Arts, Adelphi, London, and the Schools of Art at Edinburgh, Dublin, Manchester, Glasgow, Birmingham, and Hanley in the Potteries.

\* The Worshipful Company of Salters contribute £10 annually to this prize fund. The Worshipful Company of Goldsmiths contribute £15 "for the encouragement of workmen in the precious metals." Particulars of the Goldsmiths Company's prizes are given. The North London Exhibition Prize consists of the interest of £167 7s. 3d., invested in the name of the Society of Arts, to be awarded by the Council "for the best specimens of skilled workmanship" at the Society's Exhibition of the works sent in for the prizes named above.

Photographs and rough casts in metal, &c., may be purchased at the Society of Arts, John-street, Adelphi, at the prices named.

The plaster casts of the examples in classes 2 and 4 (except bas-relief 4a) may be obtained from Mr. Franchi, 15, Myddelton-street, Clerkenwell, E.C.; the other casts from Mr. D. Brucciani, Galleria delle Arti, 40, Russell-street, Covent-garden, W.C.

\* \* The Council are happy to announce that several of the works which received first prizes in the competitions of 1863, 1864, 1865, 1866, and 1867, have been purchased by the Department of Science and Art, to be exhibited in the South Kensington Museum and the Art Schools in the United Kingdom.

#### FIRST DIVISION.

##### WORKS TO BE EXECUTED FROM PRESCRIBED DESIGNS.

For the successful rendering of the undermentioned designs in the various modes of workmanship according to the directions given in each case.

##### CLASS 1.—CARVING IN MARBLE, STONE, OR WOOD.

(a.) *The Human Figure*.—One prize of £15 for the best, and a second prize of £7 10s. for the next best, work executed in marble or stone, after part of a frieze of a chimney-piece, by *Donatello*, No. 5,795, in the South Kensington Museum; or a relieve in terra cotta, Amorini supporting an entablature; original in the South Kensington Museum, No. 11,940. Dimensions—Two-thirds the size of the cast (linear).—The design may be adhered to strictly or adapted to any architectural purpose.

[Cast—Fifteen Shillings; Photograph—One Shilling.]

(b.) *Ornament*.—One prize of £10 for the best, and a second prize of £5 for the next best work, executed in marble, stone, or wood after a carved chair-back in the South Kensington Museum. Dimensions—To be two-thirds of the cast (linear).

[Cast—Twelve Shillings. Photograph—One Shilling.]

(c.) *Ornament*.—One prize of £10 for the best, and a second prize of £5 for the next best, work executed in stone, after a *Gothic bracket* in the Architectural Museum. Dimensions the same as the cast. In this design the details may be improved by the introduction of small animals, and the human head may be changed according to the taste of the art-workman.

[Cast—Ten Shillings; Photograph—One Shilling.]

(d.)—One prize of £20 for the best, and a second prize of £10 for the next best, work carved in wood after a panel in carved oak. Original in South Kensington Museum, No. 274. Dimensions—Optional.

[Photograph—Sixpence.]

(e.)—One prize of £15 for the best, and a second prize of £7 10s. for the next best, work carved in wood after the entablature of a chimney-piece carved in wood, in the South Kensington Museum, No. 85,664. Dimensions—Same size as original.

[Photograph—One Shilling.]

(f.) *Ornament*.—One prize of £10 for the best, and a second prize of £5 for the next best, work carved in wood after an *Italian picture frame* in the possession of Henry Vaughan, Esq. Dimensions optional.—This design may be adhered to strictly or adapted in such manner as the workman may think fit.

[Photograph—Two Shillings.]

(g.) *Ornament carved and gilt*.—One prize of £10 for the best, and a second prize of £5 for the next best, work

executed in wood, carved and gilt after a *Console Table* in the South Kensington Museum, No. 6,497, of the period of Louis XVI. The work to be carved roughly in wood, then to be prepared in the white by a gilder, then cut up or carved in the white by the carver, then to be gilt in mat and burnished gold. As such work may probably be executed by two persons, the prize will be apportioned as the judges may determine.

[Photograph—One Shilling.]

##### CLASS 2.—REPOUSSÉ WORK IN ANY METAL.

(a.) *The Human Figure as a bas-relief*.—One prize of £10 for the best, and a second prize of £5 for the next best, work executed after the Martelli Bronze Mirror Case, No. 8,717, in the South Kensington Museum—dimensions, 6½ inches diameter; or a panel in low relief, the Virgin and Child, in South Kensington Museum, No. 66,666. Dimensions—One-third of original.

[Cast of Mirror Case—Two Shillings; Photograph—One Shilling. Cast of Bas-relief, 3s. 6d.]

(b.) *Ornament*.—One prize of £5 for the best, and a second prize of £3 for the next best, work executed after a tazza in silver, date 1683, the property of Sir W. C. Trevelyan, Bart., now in the South Kensington Museum. Dimensions—The same as the model.

[Photograph—One Shilling.]

##### CLASS 3.—HAMMERED WORK, IN IRON, BRASS, OR COPPER.

*Ornament*.—One prize of £7 10s. for the best, and a second prize of £5 for the next best, work executed after a knocker in wrought iron, in the South Kensington Museum, No. 9,007.

If the work is executed in brass or copper, it should be rendered subject to the conditions of these metals, either as split and riveted or partly beaten from the sheet, and the awards will be made in view of these conditions. The work must not be covered with colour or any coating which masks the workmanship.

[Photograph—One Shilling and Threepence.]

##### CLASS 4.—CARVING IN IVORY.

(a.) *Human Figure in the round*.—One prize of £15 for the best, and a second prize of £10 for the next best, work executed after an ivory plaque of Silenus and Amorini, by *Fiamingo*, No. 1,059, in the South Kensington Museum; dimensions—five inches greatest length; or after a relieve in marble, the Virgin and Child, No. 4,233 in the South Kensington Museum. Dimensions—To be reduced in height by one-third (linear).

[Cast of the Plaque—Two Shillings; and Photograph of the Virgin and Child—One Shilling each.]

(b.) *Ornament*.—One prize of £7 10s. for the best, and a second prize of £5 for the next best, work executed after an ivory crozier head, in the South Kensington Museum, No. 214,665. Dimensions—The same as the cast.

[Cast—One Shilling.]

##### CLASS 5.—CHASING IN BRONZE.

(a.) *The Human Figure*.—One prize of £10 for the best, and a second prize of £5 for the next best, work executed after a panel in low relief, the Virgin and Child, in the South Kensington Museum, No. 66,666.

A rough casting in bronze, on which the chasing must be executed, will be supplied by the Society at cost price.

[Plaster Cast—Three Shillings and Sixpence.]

(b.) *Ornament*.—One prize of £10 for the best, and a

second prize of £7 10s. for the next best, work executed after a silver gilt missal cover, in the South Kensington Museum, No. 2,639.

[Photograph—One Shilling.]

CLASS 6.—ETCHING AND ENGRAVING ON METAL—NIELLO WORK.

*Prizes of the Goldsmiths' Company.*

*Ornament.*—One prize of £10 for the best, and a second prize of £5 for the next best, work executed after arabesques by Lucas Van Leyden, A.D. 1528. No. 18,968 in the South Kensington Museum. To be engraved the height of the photograph, and, if round a cup or goblet, repeated so as to be not less than nine inches in length when stretched out.

[Photograph—Sixpence.]

CLASS 7.—ENAMEL PAINTING ON COPPER OR GOLD.

(a.) *The Human Figure.*—One prize of £10 for the best, and a second prize of £5 for the next best, work executed after a panel in low relief, the Virgin and Child, in the South Kensington Museum, No. 66,66. Ground to be blue. Dimensions—Half size of original.

[Photograph—One Shilling; Cast, Three Shillings and Sixpence.]

(b.) *Ornament.*—One prize of £5 for the best, and a second prize of £3 for the next best, work executed after the back of a plate, No. 8,428, in the South Kensington Museum. Ground to be blue. Dimensions—The same as the Photograph.

[Photograph—Sixpence.]

CLASS 8.—PAINTING ON PORCELAIN.

(a.) *The Human Figure.*—One prize of £10 for the best, and a second prize of £5 for the next best, work executed after a photograph of a drawing by *Raphael*, No. 20 in the South Kensington Museum. Dimensions—The same as the Photograph. This work is to be coloured according to the taste of the painter.

[Photograph—Ninepence.]

(b.) *Ornament.*—One prize of £5 for the best, and a second prize of £3 for the next best, work executed after a photograph of ornament by *Aldegrever*, No. 2,118 in the South Kensington Museum, and coloured according to the taste of the painter, with a gold ground. Dimensions—Double the size of the Photograph (linear).

[Photograph—Sixpence.]

N.B.—A second set of prizes of the same amount is offered to female competitors. See conditions, Section VIII.

CLASS 9.—DECORATIVE PAINTING.

(a.) *Ornament.*—One prize of £5, and a second prize of £3, for a work, executed after a photograph of ornament by *Aldegrever*, in the South Kensington Museum, No. 2,118. Dimensions—length, 3 feet.

[Photograph—One Shilling.]

(b.) *Ornament.*—One prize of £5, and a second prize of £3, for a work, executed after a *picture frame*, in the South Kensington Museum, No. 7,820. Dimensions—5 feet by 3 feet 11½ inches, outside measure. The works to be executed on canvass, either with or without stretchers, in cool colours. Some lines of the mouldings may be gilt.

[Photograph—One Shilling and Sixpence.]

N.B.—A second set of prizes of the same amount is offered to female competitors. See conditions, Section VIII.

CLASS 10.—INLAYS IN WOOD (MARQUETRY, OR BUHL), IVORY OR METAL.

*Ornament.*—One prize of £5 for the best, and a second prize of £3 for the next best, work executed after a guitar inlaid with ivory, ebony, and mother-o'-pearl. The ornament to be of the same dimensions as the original, but may be applied to any object. No. 9,611 in the South Kensington Museum.

[Photograph—Sixpence.]

CLASS 11.—CAMEO CUTTING.

(a.) *Human Head.*—One prize of £10 for the best, and a second prize of £5 for the next best, work executed after a bust of *Clytie* in the British Museum—The head only.

[Cast of the Head—Five Shillings.]

N.B.—A second set of prizes of the same amount is offered to female competitors. See conditions, Section VIII.

CLASS 12.—ENGRAVING ON GLASS.

*Ornament.*—One prize of £10 for the best, and a second prize of £3 for the next best, work executed after arabesques by Lucas Van Leyden, A.D. 1528. No. 18,968 in the South Kensington Museum. To be engraved the height of the engraving; and if round a glass or goblet, repeated so as not to be less than 9 inches long when stretched out.

[Photograph—Sixpence.]

N.B.—A second set of prizes of the same amount is offered to female competitors. See conditions, Section VIII.

CLASS 13.—WALL MOSAICS.

*Human Head.*—One prize of £10 for the best, and a second prize of £7 10s. for the next best, work executed after a *Female Head* (over the lame cripple) in the cartoon of the "Beautiful Gate." The dimensions of the work should be regulated by the size of the tesserae proposed to be used, which size may be left to the choice of the artist. Although desirable, it is not necessary to execute the whole subject in actual mosaic. The original is at the South Kensington Museum. Tesserae of two sizes may be obtained from Messrs. Minton, Stoke-upon-Trent, Messrs. Maw and Co., Brosely, Shropshire, Messrs. Powell and Sons, Temple-street, Whitefriars, and Messrs. Jesse Rust and Co., Carlisle-street, Lambeth.

[Photograph—One Shilling.]

N.B.—A second set of prizes of the same amount is offered to female competitors. See conditions, Section VIII.

CLASS 14.—GEM ENGRAVING.

(a.) *Human Head.*—One prize of £10 for the best, and a second prize of £5 for the next best, work executed after a cameo portrait of *Savonarola*, No. 7,541 in the South Kensington Museum. Dimensions—The same as the cast.

[Cast—Sixpence.]

(b.) *Full-length Figure.*—One prize of £10 for the best, and a second prize of £5 for the next best, work executed after a small Wedgwood medallion, No. 5,827 in the South Kensington Museum. Dimensions—The same as the cast.

[Cast—Sixpence.]

CLASS 15.—DIE SINKING.

*Human Head.*—One prize of £10 for the best, and a second prize of £5 for the next best, work executed after

a Wedgwood Medallion in the South Kensington Museum, No. 3,470. Dimensions—

[Photograph—Sixpence.]

#### CLASS 16.—GLASS BLOWING.

*Ornament.*—One prize of £7 10s. for the best, and a second prize of £5 for the next best, work executed after an original in the South Kensington Museum, No. 6,785. Dimensions—As given in the wood engraving.

[Photograph—Sixpence.]

#### CLASS 17.—BOOKBINDING.

(a.) *Bookbinding.*—One prize of £7 10s. for the best and a second prize of £5 for the next best, work executed in bookbinding, after a specimen in the South Kensington Museum, No. 16,460. The work to be bound should be some classical author of the size given. Dimensions—The same as the photograph.

[Photograph—One Shilling.]

#### CLASS 18.—EMBROIDERY.

*Ornament.*—One prize of £5 for the best, and a second prize of £3 for the next best, work executed, either after *Two Angels* in an example in the South Kensington Museum, No. 1194,64, or an Italian Silk in the South Kensington Museum, No. 7,468, which may be adapted to a screen. Dimensions—According to the taste of the embroiderer.

[Photograph—German, Sixpence ; Italian, One Shilling.]

#### CLASS 19.—ILLUMINATIONS.

*Ornament.*—One prize of £5 for the best, and a second prize of £3 for the next best, copy made from an Altar Card, attributed to Giulio Clovio, in the South Kensington Museum, No. 2,958, or from a MS. border, date 1450, No. 3,057, in the South Kensington Museum. Dimensions—One-half larger than the Photograph (linear).

[Photograph—Two Shillings.]

### SECOND DIVISION.

#### CLASS 20.—WOOD CARVING.

(a.) *Human figure in the round, in alto or in bas relief. Animals or natural foliage may be used as accessories.* 1st prize of £25 and the Society's Silver Medal. 2nd prize of £15. 3rd prize of £10.

(b.) *Animal or still-life. Fruit, flowers, or natural foliage may be used as accessories.* 1st prize of £10. 2nd prize of £7 10s. 3rd prize of £5.

(c.) *Natural foliage, fruit, or flowers, or conventional ornament, in which grotesque figures or animals may form accessories, preference being given where the work is of an applied character for ordinary decorative purposes, as representing commercial value.* 1st prize of £10. 2nd prize of £7 10s. 3rd prize of £5.

(By Order)

P. LE NEVE FOSTER,  
Secretary.

April, 1867.

### SUBSCRIPTIONS.

The Lady-day subscriptions are due, and should be forwarded by cheque or Post-office order, crossed "Coutts and Co.," and made payable to Mr. Samuel Thomas Davenport, Financial Officer.

### EXAMINATIONS, 1867.

The following additions should be made to the List of Certificates awarded to Candidates which was given in the *Journal* of the week before last :—

- 1192—Burrell, James S., 18, Oldbury Local Board, railway carriage finisher—Arith. (1st)
- 1189—Edwards, Joseph J., 18, New Swindon M.I., clerk—Bkpg. (3d)
- 1187—Lancett, John, 18, New Swindon M.I., engine-fitter—Arith. (3d)
- 1188—Stone, Samuel, 22, New Swindon M.I., joiner—Bkpg. (3d)
- 1186—Thomson, Mary S., New Swindon M.I., milliner and dressmaker—Dom. Econ. (1st)
- 1190—Webb, George, 27, Oldbury Local Board, coachmaker—Arith. (3d)
- 1191—Whyman, John, 20, Oldbury Local Board, wagon builder—Arith. (3d).

The Second Prize in Geometry has been awarded to No. 127, Daniel Welwood, 17, Belfast Science School, clerk.

### Proceedings of the Society.

#### FOOD COMMITTEE.

A meeting of the Sub-Committee on Fish was held on Tuesday, 14th May :—Present, Mr. Benjamin Shaw in the chair; Mr. Caird, Mr. Ware, Mr. Michael, Professor J. Wilson, Captain Grant, and Mr. Ludford White.

Mr. GEORGE W. HART, Superintendent of the Hayling Oyster Fishery, attended on the invitation of the Committee, and laid on the table plans of the breeding and feeding ponds belonging to that company at Hayling island; also of Chichester harbour, where a portion of the foreshore had recently been acquired by the same company in order to extend their operations in oyster culture, and handed in the following statement :—

#### OYSTER CULTURE IN 1866-67.

It is difficult, in treating of this subject, to avoid referring to previous results obtained abroad, inasmuch as prior to June last nothing whatever had been accomplished in England in furtherance of this branch of pisciculture.

The cultivation of oysters abroad has been in three distinct and different methods, as required by as many varied local conditions.

The ancient Lake Fusaro is an example of the enclosure system; the Isle de Rhé shows us how to utilise our foreshores; and the experiments of M. Coste, at St. Brieux indicate that much may be done for the improvement of the oyster grounds in the deeper waters of the open channel.

The Lake Fusaro plan possesses many advantages over the other two, and has but one drawback—it is costly, and requires the outlay of a large capital for three years before any return is obtained; but it is undoubtedly the most certain and remunerative in the end. The successful experiments of last summer having been conducted on this plan, I shall have but little to say on the other two.

A reference to the map of England will at once show that there are on our coasts few places so well adapted for fish farming as the portion lying between Selsea-bill and Weymouth, comprising the harbours of Chichester, Emsworth, Langston, Portsmouth, Southampton, and Poole, with many other smaller inlets, and presenting at ebb tide immense expanses of mud of the very best kind for growing oysters and other molluscs.

These grounds are denuded of oysters, from the absence of any regulations or protective laws, although not many years since they abounded in natives not greatly inferior to the Whitstable or Colchester kinds.

Owing to the absence of spat, and the consequent scarcity of brood on the Essex and Kentish shores, it has of late been remunerative to companies established there to dredge in localities much more distant than those they formerly resorted to, and it is to be noted that whereas the dredgers of the harbours above-named, although not under any regulations, of their own will abstained from the removal of spat and cultch, and returned, when caught, all oysters under two inches diameter, yet the dredgers from Whitstable and Colchester, not content with a fair share, have carried away not only brood but also every stone procurable with spat on it, and but little of the spat so obtained has been old enough for removal, and consequently died, thus causing incalculable damage, and, in fact, destruction to an important fishery here without benefiting the public in any degree, the plea speciously advanced, that although the local industry of the fishermen here was destroyed yet that the general public has been benefited by the transfer of the brood so obtained to Whitstable or Colchester, being shallow in the extreme and not borne out by the result. The consequence is that oyster-dredging in the harbours named no longer affords a living, whereas formerly the boats engaged in it were to be counted by hundreds. This being the condition of the local fisheries at the period when my attention was first directed to the subject, learning that success had attended the efforts of M. Coste to revive the French oyster fisheries, in the course of the summer of 1865 I visited the coast of France from St. Brieux to Rochelle, in order to examine and judge for myself how far his system might be applicable to our English shores.

At St. Brieux and Cancale the oyster beds were in deep water, and the cultivation was carried on by dredging, as at Whitstable, but the beds being over-worked and damaged by N.W. gales, which set in there with great violence, had become buried in the sand, and abandoned, because the few oysters remaining were insufficient to repay the labour of keeping them clean. M. Coste was unfortunate in selecting this exposed part of the coast, inasmuch as although his experiments there resulted in a wonderful success (the fascines which he had sunk over the beds averaging some 20,000 oysters each), yet the returning winter gales drove the fascines from their moorings, and once more destroyed both the brood and the parent oysters.

The system of oyster culture as pursued at the Isle de Rhé, was established nearly simultaneously with, but quite independently of, M. Coste's experiments in the Bay of St. Brieux, and was a better adaptation of means to the requirements of the locality.

The shores of this island are exposed to severe gales and heavy seas from the Bay of Biscay. M. Bœuf therefore wisely abstained from the use of fascines, and contented himself with simply providing a better arrangement of such collecting materials as were at hand, and sheltering the young from the destructive heat of the sun. This he effected by forming a series of half-tide ponds with the rocks which there strew the coast, and placing the breeding oysters under rows of these stones in the ponds so formed. Dr. Kemmerer substitutes tiles for stones, but this is the only difference.

At Arcachon the tiles yield good annual returns, but at Poole, where they were tried last summer, under the management of a French gentleman from Arcachon, the result was *nil*, and previous experiments at Southend and Herne Bay were equally unfavourable.

I thought it evident that a control of the temperature was essential to any plan for making the spat, and nearly every person engaged in the oyster trade agreed in this opinion. I determined, therefore, upon carrying out the Fusaro plan at Hayling, where I obtained on lease 900

acres of suitable mudlands, a portion of which was already bounded by a railway bank, carried across the mud for the purpose of reclamation; this ground I subsequently turned over to the South of England Oyster Company (Limited), and, acting as their manager, I have this year 30 acres under cultivation, and have laid down therein about 1,000,000 of breeding oysters, and 20,000 hurdles, having a total collecting surface of 400,000 square feet, or nearly 10 acres.

As there was necessarily some delay in enclosing this area, I also secured, in March, 1866, the old Saltern works, on the east side of Hayling Island, consisting of an enclosure of six acres and a pond of four acres. This pond having been laid dry, to admit of the weed being removed, it was to the extent of one acre covered with sand and shingle, in layers, and upon the hard bottom thus obtained some 50,000 oysters were placed in the month of April, 1866, together with about 80 hurdles, of 15 square ft. each, placed over them horizontally, and secured by stakes.

On the 15th June a considerable fall of spat took place, although it was not until July that any oysters were found attached to the hurdles. On the 15th July the hurdles were found to be literally covered on the underside with oysterlings, the general size at that time being about  $\frac{1}{8}$  inch diameter. On being removed subsequently to another part of the grounds for growing I had the numbers adhering to three hurdles ascertained, and this gave an average of 10,400 per hurdle, being at the rate of 600 per square foot of surface. Besides this satisfactory result, the shingle is everywhere covered with spat, as are also the rushes and banks of the pond; and I have no doubt whatever but that, had the entire surface of the pond been prepared with hurdles, they would have been equally well filled as the 80 laid down. The market value of the whole crop was estimated by an oyster merchant as being, at least, worth £2,000 when grown to a saleable size. These oysters have not suffered in the least from the late winter, and are now growing rapidly.

I shall this year also construct collectors for the spat on the Isle de Rhé system, but I think it cannot be relied upon for an annual crop, although in favourable seasons it adds greatly to the productives of the shores. In fact, it affords simply places of attachment to the floating spat, the greater portion of which would otherwise fall on unsuitable ground and therefore perish; but where natural beds exist at no great distance from the shore I am of opinion that the Isle de Rhé system will be valuable, provided the materials for the beds be at hand and obtainable at a moderate price.

I tried last year the system of fascines sunk in the Spithead Channel, but in the heavy gales they suffered the fate of those at St. Brieux.

That oyster farms on the plan of the South of England Oyster Company are beneficial to the population of the adjoining coast cannot be doubted, as at present the outlay in wages exceeds £2,000 annually, and when fully established will approximate £10,000.

There is at the present time great need of a fishery board, for the regulation of the coast fisheries. Many regulations of the Board of Trade are, in my opinion, inefficient and in many respects injurious.

The South of England Oyster Company have fitted up apparatus for hatching salt-water fish, but up to the present time I have not succeeded in obtaining fertilised ova. In a portion of their grounds, however, I bred last summer several thousands of lobsters, and I believe that this is also a branch of ocean farming which is deserving of attention.

In reply to questions by members of the Committee,

Mr. HART stated it was found necessary to enclose the whole of the breeding ponds. A bank was carried along about four feet above the water line, which was obliged to be made strong to withstand the heavy seas. There was a great difference between the temperature of the

water inside and outside the ponds—as much as from 4° to 6° every day. The average temperature at that time was about 72°. Temperature had an essential effect upon the oysters, both in breeding and growing. The late very severe weather did not affect the oysters so as to kill them; but the old oysters were more delicate than the young ones in this respect. He called oysters of 10 or 12 years of age old oysters, and he had them about that size for breeding. He had a Colchester native which he should say was 30 years old. The great thickness of the shell was a test of the age; but beyond a certain period there were no certain rules to go by. To a certain extent the age could be known by counting the number of rings on the upper shell. Equability of temperature was most desirable, and to obtain that there must be a body of water not less than two to three feet deep. He liked the rays of the sun to penetrate to the bottom of the ground. The bottom of the water was much warmer than the top, as he had frequently tested in going over the grounds in a boat, the difference of temperature being quite perceptible to the hand; and in a distance of a few yards there might be a difference of temperature, according to the nature of the bottom, or according as it is more or less sheltered from the wind. He took observations with the thermometer sometimes six times a day, and he almost invariably found the bottom portion of the water warmer than the top, which might to some extent be occasioned by the chilly effect of rapid evaporation. It was also the case in deep sea that the temperature of the bottom was higher than the top. He had comparative tables of the heat of the atmosphere and that of the water in the parcs, but he had not got them with him. Mr. Hart handed in the following record of readings from the thermometer in sea water in parcs 18 inches deep, from 15th June to 4th July, 1866, inclusive:—

| DAY. |      | NIGHT. |      |           |                          |
|------|------|--------|------|-----------|--------------------------|
| Max. | Min. | Max.   | Min. |           |                          |
| 60   | 52   | 58     | 54   | 15th June | Dull.                    |
| 58   | 50   | 56     | 48   | 17th June | Cloudy.                  |
| 56   | 48   | 52     | 50   | 18th June | Rainy.                   |
| 60   | 52   | 60     | 52   | 19th June | Cloudy.                  |
| 60   | 54   | 60     | 54   | 20th June | Hazy.                    |
| 70   | 58   | 68     | 60   | 21st June | Clear.                   |
| 70   | 62   | 70     | 58   | 22nd June | Clear.                   |
| 70   | 62   | 70     | 60   | 23rd June | Clear.                   |
| 70   | 62   | 68     | 60   | 24th June | Clear.                   |
| 70   | 62   | 70     | 62   | 25th June | Clear.                   |
| 74   | 64   | 70     | 62   | 26th June | Clear.                   |
| 72   | 64   | 70     | 64   | 27th June | Thunder and heavy storm. |
| 75   | 64   | 74     | 62   | 28th June | Thunderstorm.            |
| 76   | 63   | 74     | 64   | 29th June | Hazy.                    |
| 73   | 54   | 63     | 50   | 2nd July  | Overcast.                |
| 60   | 54   | 58     | 52   | 3rd July  | Overcast.                |
| 60   | 50   | 59     | 50   | 4th July  | Squally.                 |

The average for the last fortnight in June being:—

For the day time..... Max. 67 ... Min. 58 ... Mean 62½  
For the night ..... Max. 65½ ... Min. 57½ ... Mean 61½

In continuation, Mr. Hart stated that the temperature of the water within the parcs was from 4° to 6° warmer than that of the external sea. On our shores there was but one species of the oyster; the difference between natives and the large coarse oyster consisting merely in the ground on which they were deposited, and their subsequent treatment. Oysters deposited on the mud would not become large like the Channel oysters; but if the natives were deposited in the channel they would become so. In some localities oysters make more rapid growth than in others; for instance, in places where there is a great deal of material to enable the oyster to make shell rapidly it will grow to a great size; whereas, if put on muddy ground, and supplied with plenty of food, and but little shell-forming material, they become fat and lazy, and they do not care to make their house larger; but on poor feeding grounds they seem to run to shell a great deal. It depends upon the supply of food. An oyster brought from the

deep-sea and placed on good feeding-ground, though it does not alter in appearance, becomes a well-fed oyster. The plan at Hayling is not to feed but to breed the oysters; to establish great breeding beds, from which it is expected a supply may be found for the feeding beds of the country. The Whitstable, the Herne Bay, and other feeding companies, we expect, will be our principal customers for young oysters, and not as competing with us. The position at Hayling, from the peculiarity of the water, is very well adapted for the production of oyster brood, especially for early brood. The facilities for forming embankments for laying down breeding oysters are also great. There is such an extent of ground there for breeding oysters as would enable us to stock to a large extent the best feeding grounds in this country?

Professor WILSON—Are you acquainted with Poole harbour?—Yes.

I should think that was a good position, because there are hundreds of acres of mud-banks?—It is not enclosed, and you cannot do that unless you close one of the two channels. At Hayling, at Chichester, and at Langston, we have complete facilities for enclosing the grounds. The feeding grounds at the mouth of the Thames are said to owe their special value to the amount of London sewage deposited there.

Mr. CAIRD—With regard to the Fusaro plan, where had it its origin?

Mr. HART—At Fusaro, the old Avernus, a little distance from Naples. It was used as an oyster pond formerly, and has been so since. The plan adopted there is that of piling up stones on the muddy bottom, which is very offensive black-looking mud, and when stirred up the stench is unbearable. Stones are placed upon the mud, and the oysters upon the stones. Piles are driven round the ponds and fascines are hung upon them by strings suspended vertically. The lake communicates with the sea by means of a small canal. The tide at Fusaro is very little, and the canal is about two miles long. I am not aware what is the depth of water in the pond. The temperature would probably be higher than anything ever occurring at Hayling. By means of an enclosure from the sea, and the power of admitting the tide when thought proper, we can to a great extent in summer time govern the temperature of the breeding-beds, and this is most essential.

Do you suppose, generally speaking, on the coast of England the temperature is sufficient for the production of the spat?—I cannot say what the temperature is, but I think so.

The difference between your system and the natural process is this—that in the open sea, the temperature is not very high, and the tides flowing out and in daily, renders it impossible to regulate the temperature, so that the spat either may not be produced, or may be lost when produced?—That is one of the things; but the spat goes backwards and forwards with the tide. But in our ponds we can regulate the temperature to a great extent, and to a great extent control it during the spatting season. A succession of cold nights would be injurious to us. Last summer the temperature was not lower than 62½° in the middle of the day and 61½° at night, and this continued for fourteen days together, and that was at the time when the spat was coming on. There was no spat in Chichester Harbour last year, except in our beds. By regulating the temperature we insured spat, while there was no natural spat outside. In a good season the spat is produced in such enormous quantity that, if preserved, it would be sufficient to stock the feeding-beds of the country for six or seven years in succession, but after many years, when there has been a want of spat the beds become dirty, because it does not pay to dredge, and when the spat comes the ground is in a bad state for it, and the spat is sacrificed. Last year the first experiment was tried. We had about four acres of ponds, and about one acre of shore for laying oyster

ova. We had eighty hurdles, and 50,000 breeding oysters. The success of last year was so decided that we have greatly extended our operations this year. We shall have 10 acres of collectors instead of 1,200 feet; and 20 acres of shingle instead of one; and a million of oysters instead of 50,000. Our supply is dredged off the French coast, from ground which it was open for nation to fish upon.

After you have completely established, should you be so fortunate as to do so, breeding beds of this kind, it is not necessary to recruit the ground at the same rate that you have been doing; the mother oysters will continue to breed?—I should myself prefer to change the breeding stock every year.

What would you do with those which have bred?—Send them to the London market. We can fatten them equal to the Shorehams, but not so as to be comparable with the natives. The Shorehams are deep-sea oysters, and are laid upon shore beds to fatten.

You would not keep the brood oysters after one season?—No; they get poor in winter.

When would they be ready for the market?—Before Christmas the same year, but they would have to be sent to other beds for the purpose.

Then you prepare ground for a new stock of mother oysters from the deep sea?—Yes, every year. We find that the change of ground is most beneficial to the oysters, and it is that which constitutes the Whitstable working. They dredge the oysters from one bed and shift them to another piece, though it may not be far off. It is that which gives the oysters their good flavour, and causes them to fatten so rapidly. I fancy the reason why our spawn comes so early is that we bring the oysters out of deep water and put them in shallow.

Your plan involves a fresh supply of parent oysters from the deep sea every year of about 2½ millions?—I think it is desirable to have them.

In your future operations you do not anticipate the necessity of entirely stocking the beds with breeding oysters from the deep sea?—No.

Have you formed any opinion as to whether the oyster is hermaphrodite, or male and female?—I believe both the sexual organs are present, but whether milt will fertilise the ova of the same animal I cannot say. I find in May nothing alive in the oyster but spermatozoa; but that both organs exist I am sure, because I find spermatozoa in every oyster, but not always ova. I think we may be able to select the oysters which are to be kept for brood, and send away another portion for feeding or breeding stock. I think as soon as the grounds are well filled there will always be sufficient left at the bottom of the ponds to keep up the spat. After the grounds are matured we do not think there will be much call by us upon the beds of the sea. The oyster commences to breed about two years old, and small oysters of that summer will be fit to send off to the feeding grounds by Christmas, but we shall probably keep them till next summer. They are sold at so much per bushel or tub. We buy the oysters from the deep sea beds by the bushel. We have been paying less this year than we did last. Last year we paid 7s., this year we paid only 6s. The oyster brood of last year will be fit for the London market in about two years.

The CHAIRMAN, reverting to the paper handed in by Mr. Hart, and read at the commencement of the sitting, said there was at the latter part of it reference made to a matter on which the Committee might be able to take some action. That was with respect to the regulation of the Board of Trade in relation to the coast oyster fisheries, on which Mr. Hart expressed himself that some alterations were required in the interests of those fisheries. They had listened to what Mr. Hart had stated to the Committee, but it did not indicate any course of action. If prejudicial regulations required to be removed, he apprehended that was something to which the Committee could practically turn their atten-

tion. He would, in the first instance, ask Mr. Hart in what way he conceived the regulations of the Board of Trade operated injuriously to the oyster fisheries of the country?

Mr. HART replied that at present dredging is permitted in the month of September, which, he said, was exceedingly wrong; and not only that, but they authorised dredging to be continued the whole summer through in English waters.

Mr. CAIRD said it was pressed upon the Fishery Commissioners the propriety of curtailing the time one month at the end of the season, and adding one month at the beginning. The reasons urged for this were two—first, that as the oysters did not generally begin to spawn till the month of May, it would be an immense advantage to the fishermen to go to the deep-sea to fish in quiet water. Then, again, it was stated that in the month of September the oysters had not recovered from spawning, and were out of condition; for those reasons the changes were made. It was no doubt highly objectionable that oysters should be taken at a time when they were out of condition; but the young brood would not be destroyed by dredging in September.

Mr. HART apprehended that dredging at that period could not be carried out without injury from the dredge to the young spat. With regard to the damage done by the Whitstable and Colchester fisherman being allowed to procure spat from anywhere they choose, he had something to say on that point when they came to it. He spoke in the interest of the local fishermen. The Whitstable people especially were greatly given to overdredging the beds to the extent of carrying off the spat and culch, and wholly destroying the ground, and there was no power to prevent them doing this vast amount of injury to the deep-sea beds. The company with which he was connected, Mr. Hart added, had applied to the Board of Trade to give them a channel which was now used as a dredging ground, and they offered to stock the water inside the Isle of Wight, provided the Board of Trade would appoint a conservancy board to manage it. The company offered to provide the spat, and stock the ground for the benefit of the local fishermen; but of course the Whitstable people must be precluded from coming to dredge there. At the commencement of the season they came 50 or 60 sail strong and took away everything they could get, and left nothing to breed from. The local fishermen would, for their own sakes, work the ground properly and keep it well stocked. In reply to further questions, Mr. Hart stated that he had seen the green coloured oysters met with in France, which he considered to be the result of local circumstances. He said he could make oysters green in a fortnight; it was a mere matter of the ground on which they were placed.

Mr. CAIRD remarked that in the neighbourhood of Malden, in Essex, a peculiar green coloured oyster was produced, which for years past had been sent to the French markets.

Mr. HART stated that there had been a great quantity of the green weed, which grew immensely in the ponds under his superintendence, which at first affected the colour of the oysters, imparting a green colour to the beard; but as the weed in question was removed, the oysters became of a proper colour. Blanket weed was the local name given to the plant of which he spoke.

Mr. CAIRD remarked that a green coloured description of oyster was found in the shallow waters of the Mediterranean.

The following information has been received through the courtesy of Lord Stanley, Secretary of State for Foreign affairs:—

#### BELGIAN LAW AGAINST ADULTERATION OF FOOD.

Those who have adulterated, or caused to be adulterated, provisions, or drinks, or any kind of alimentary

substances, intended for sale, shall be punished by an imprisonment of from eight days to a year, and a fine of from 50 to 1,000 francs, or one of these penalties only.

The persons punishable under the preceding article are—1st. Those who sell, or expose for sale, provisions, drinks, or alimentary substances of any kind, knowing them to be adulterated. 2nd. Those who, by placards, written or printed, published, sold, or distributed, shall maliciously give instructions for facilitating or aiding in the adulteration of food and drinks.

Imprisonment from eight days to six months, or a fine from 26 to 500 francs, or one of these penalties only, is enacted against those who have in their warehouse, shop, or any other place, drinks, provisions, or alimentary substances, intended for sale, knowing them to be adulterated.

In certain cases, when the accused shall be condemned to an imprisonment of more than six months, he shall be deprived of his license, and will not be able to obtain another during the term of his imprisonment. The court can always direct that the judgment shall be posted in places where it orders, and inserted, either entire or in extract, in such newspapers as they may direct, at the expense of the convicted.

The provisions of the law will be applied without prejudice to heavier punishments given by the Code Pénal, or by special laws.

Those who shall, without criminal intent (provided for under the foregoing law), sell, or expose for sale, adulterated drinks, provisions, or alimentary substances, shall be punished according to articles 475 and 476 of the Code Pénal. In case of a fresh offence, the penalty of imprisonment for five days at most can be pronounced.

In fining, the court and tribunals can order that, in default of payment after two months from the date of the judgment, whether after a hearing, or notice, or by default, this fine may be changed into imprisonment, not exceeding the term of a year, in the cases above provided for, or by a simple police imprisonment, not exceeding the term of seven days, in cases named in the preceding article. The condemned can be always released on paying the fine.

With regard to the condemnation in costs pronounced for the benefit of the state, the duration of imprisonment shall be fixed by the judgment or decree, which cannot be less than eight days, nor more than one year or one month, according to the nature of the offence. Nevertheless the convicted, who can prove their insolvency according to the Criminal Code, can be liberated after having undergone seven days' imprisonment, when the expenses shall not exceed 25 francs. Imprisonment is not carried out against those convicts who have attained their 70th year.

Adulterated provisions, drinks, or alimentary substances which are found in the possession of the culprit shall be seized and confiscated. If they can be used for food, they shall be handed over to the charitable institutions of the Commune where the crime has been committed. If not they must be destroyed.

The penalties can be applied cumulatively or separately.

When any extenuating circumstances exist in favour of the accused, the penalty of imprisonment and fine pronounced under the present law can be reduced respectively below 8 days, or below 26 francs, without their being simple police cases.

#### REGULATIONS FOR THE SALE OF BUTTER IN THE CITY OF BRUSSELS.

Two experts are appointed for the examination of butter destined for sale or the consumption of the inhabitants. These experts are named by the Conseil Communal; they enter on their duties after having taken an oath to fulfil them faithfully.

The local police, accompanied by the experts, make frequent visits to the markets, and to the dealers in all

public places where this commodity is sold. Butter for sale cannot be withheld from being inspected by the experts.

Butter supposed to be adulterated shall be provisionally seized, and submitted to an analysis by the city chemist. His report, combined with that of the experts, shall be transmitted, within three days from the date of the seizure, to the chief Commissioner of Police, who shall institute, if there be reason, the prosecution authorised by law.

At the wholesale market, butter can neither be sold nor exposed for sale, if it has not been previously submitted to the examination of the experts. Butter of the first quality will be, if required by the dealer, stamped by the expert with a wooden stamp, adopted by the Burgomaster and Aldermen.

Butter at the wholesale market is divided into three qualities, the first of which comprehends butter of the best quality stamped; the second, every kind of butter not mixed and not stamped. Butter described as mixed butter forms the third quality; a special mark is affixed to this butter.

Dealers are forbidden to assume at the wholesale market any other quality than that assigned them by the experts; they may neither alter nor efface the marks indicating the quality of butter before they deliver at the houses of their customers.

The Burgomaster and Aldermen shall deliver to the carriers of butter whom they consider most worthy of the confidence of the public, a plate with a number. These men must, in every respect, conform to the police regulations.

Besides the prosecution of delinquents for adulterating or selling adulterated butter, the infraction of the foregoing rules may be punished by a fine from one to fifteen francs, and an imprisonment of one to five days, cumulatively or separately, according to the gravity of the offence.

#### WEIGHTS AND MEASURES.—GENERAL REGULATIONS.

The decimal metrical system of weights and measures established by the law of August 21, 1816, continues to be applied in Belgium. The proper standards are kept.

The verification of weights and measures is duly provided for, as is also the supervision of weights and measures. The excise clerk specially commissioned for that purpose inquires into, with the assistance of the *employés* of the registry, and the officers of judicial police, any offences against the regulations for weights and measures. The verifiers and assistant verifiers have the duty of also ascertaining offences against the law; they take an oath before the president of the tribunal of their department. The official report of these functionaries is received as true till the contrary is proved. Persons in business where weights and measures are used are liable to the visits of these functionaries as long as their places are open.

Other places not open to the public are also subject to these visits after sunrise and before sunset; but the clerk of the excise and the verifiers can only enter these in the presence of a commissioner of police, or a member of the Communal Administration; and the procès verbal shall, in that case, be signed by him in the presence of him who makes it. The produce of the fines derived from false weights and measures shall be divided among those making the procès verbal and the state. Nevertheless, when the prosecution takes place by the public officers the fine goes entirely to the treasury.

As regards penalties—1st. A fine of 20 to 25 francs is imposed on those who possess false weights, measures, or false weighing machines. 2nd. A fine of 10 to 20 francs on those who refuse to admit the visit of the proper officers. Those who possess or employ weights and measures prohibited by article 4 of the present law. A fine of from 5 to 15 francs will be imposed on those

who possess or employ weights, measures, casks, weighing machines, not marked in the prescribed manner.

The punishment of imprisonment is from one to seven days, according to circumstances.

In default of payment of the fine, the judge may order imprisonment not exceeding seven days, the prisoner to be released on payment of the fine.

When a person is condemned in costs for the benefit of the State, the duration of his imprisonment shall be fixed by the judgment, and must not be less than eight days or exceed one month; but if insolvent, the condemned, on showing his insolvency, according to law, will be liberated after seven days' imprisonment. Persons of seventy years and upwards cannot be imprisoned. In addition to this, all false weights, measures, and instruments will be seized, confiscated, and broken, but instruments which show no other irregularity beyond the loss of their verification mark will be simply seized, and restored after judgment, as also casks which do not bear the prescribed mark. Casks bearing false indications as to their contents are treated in the same way as false measures.

### THE PARIS EXHIBITION.

Having indicated what we believe to be some of the most important facts to be remarked in connection with the machinery, hardware, and other leading branches of industry on the British side of the exhibition, and we last week pointed out some of the most glaring deficiencies, to-day we select some classes in which Great Britain is avowedly well represented.

The horological department of the English section forms one of the most attractive of its classes, and the admiration of well-informed foreigners is loudly expressed. Without waiting for the verdicts of the jury, it may fearlessly be affirmed that English chronometers, clocks, and watches have achieved a great triumph. In the case of marine chronometers, the triumph is perhaps more decided than in any other branch of the trade, and this fact is all the more important when we consider the very high place which the chronometer manufacture fills, both as regards scientific adaptation and manual skill. The show of chronometers is at once large and select. The exhibitors include Mr. C. Frodsham, who is also a juror, Messrs. Parkinson and Frodsham, Dent, Blackie, Johannsen, Kullberg, and Mercer, all of London, and Mr. Sewell of Liverpool, and it is not too much to say that England need fear no rival in this important branch of the trade.

In pocket chronometers, chronographs, and first-class watches of all kinds the show on the British side is magnificent; and the many new adaptations adopted for the improvement or the preservation of the mechanism prove that in this manufacture at any rate there is positive progress, scientific as well as industrial. High-class watches are exhibited by Messrs. Walker and Sons, Adams and Sons, Nicole and Cupt, Vivier, E. White, and by nearly all the chronometer makers above mentioned.

For excellent economical watches the English show is quite as remarkable as for the superior class just referred to; Messrs. Walker and Sons' watches for railway guards, engineers, travellers, and others, supply an example of good work at moderate cost. In the ornamental articles in the class the progress is as marked as in the rest; the decorations are generally in good taste and faultless in execution; Messrs. Dent, E. White, Walker and Sons, and Sewell show many examples of engraved and enamelled watches.

Mr. E. White exhibits specimens of chronometers and watches specially adapted to Turkey, India, and China, which may be taken as a type of the superior export trade of Great Britain. Messrs. Walkers' Indian regulators may also be quoted as examples of another important branch of the trade; and Mr. G. J. Oram

furnishes a good collection of watches for the general export trade.

In large clocks, Messrs. Dent exhibit a model, with Mr. Denison's escapement, of beautiful workmanship; and Mr. Benson shows a fine turret clock, capable of carrying hands for a dial of 15 to 18 feet in diameter, and also a smaller specimen.

It is certainly not in the class of horology that we must look for evidences of England's decline. Nor must we seek it amongst the jewellers, whose productions form another of the highly-attractive portions of the English section, and are universally admitted to show a remarkable improvement in taste, with undiminished excellence of workmanship. This is so evident that no one questions it. One exhibitor in this class, Mr. Phillips, has taken up a peculiar branch, namely, the reproduction and application of the forms of ancient jewellery, Egyptian, Persian, Etruscan, Greek, and Roman. He also shows some jewelled and enamelled mountings of cut rock crystal and other precious stones.

Let us take another class, of a totally different character to both the preceding—the only bond between the three being that art enters more or less into them all—and visit the English ceramic court. In the class of brown stone ware, and especially in the important sections of chemical and sanitary pottery, Vauxhall stands alone, the size, regularity of form, and solidity both of body and glaze of the worms, bottles, acid jars, pipe joints, stop-cocks, and many other highly-important articles exhibit great advance, and leave all competitors further than ever in the rear.

In other branches of this class of industry England has a remarkably fine show, and the evidences of progress are noticed at every step. The substance of the porcelain and earthenware is finer and more solid, the glaze more even, the colours more brilliant and purer than ever. The forms, as well as the decorations of table and other household ware, become more elegant at each exhibition.

But it is in the ornamental pottery that the greatest progress is observable. Messrs. Minton have long been famous for their majolica ware, and the show which they make upon the present occasion certainly surpasses in quality any previous exhibition of theirs, while they present some important novelties. Amongst the latter, one of the most striking is the mixture of what is called parian enamelled with celadon coloured china; there is a case full of examples of this new style. In some instances the ground is of celadon, with opaque and semi-transparent ornaments of parian; in others the celadon is laid upon a parian ground, either solid or in thin transparent films that produce a very delicate effect, while in others the two materials are joined without being absolutely mingled. In one case the junction is made in a peculiar manner: the body of a vase is formed of china and painted, while the other portions are of parian, which will not take colours. Amongst Messrs. Minton's other novelties are some imitations of Limoges *grisaille* enamel ware, including a beautiful vase by an artist named Stevens; and specimens of stone china painted in solid and brilliant colours, imitating the famous old *cloisonnés* enamels of China.

Messrs. Copeland and Son exhibit, amongst other objects, a china vase, five feet high and of great purity of form and body, with flowers finely painted by Mr. Hurten, the neck and foot of delicate green and gold, some jardinières, and a pair of smaller and very beautiful vases, decorated by the same artist; a splendid dessert service belonging to the Prince of Wales, and another with pierced edges and painted fruit; an ornamental set, decorated in a peculiar manner, in purple monochrome; dinner and other services with fillets and cyphers; some handsome painted earthenware panels for decoration; several specimens of improved jewelled ware, in the form of Verulam bottles and vases; specimens of a happy application of parian for the supports of centre pieces of dessert services; and a

curiosity in the way of gold decoration. In this case the gold is not laid on the surface of the ware, but is actually inserted, in the form of scales, with the surface level with that of the ware, and when the ware is completely finished the gold is engraved by hand.

Messrs. Wedgwood have a very fine show of their peculiar ware, known in general by their name, but in the trade as jasper ware. Many reproductions of Flaxman's charming designs, and other works conceived in the same spirit, as well as some novel applications of cameos and panels in a similar style. But besides this, they have a complete novelty, which has attracted great attention, a new kind of ornamental ware; the body is fine faience, and the decorations are painted, with great skill, by Mr. Lessore, after whom this new faience is christened. The subjects consist of landscape, animals, and flowers—some drawn from La Fontaine's fables and the works of other authors, and others original. This ware has found purchasers in the highest quarters. The Emperor of the French is stated to be one of Messrs. Wedgwood's customers, and the other great English potters have also been largely patronized in the same manner. Another of Messrs. Wedgwood's novelties which may be mentioned, is a service, decorated with designs from Chinese MSS., brilliantly painted by Mrs. Brownswold.

These are not the only classes in the group to which they belong in which England exhibits great excellence, and very marked progress, but these must be noticed in a future number.

The number of visitors to the Exhibition, for the time of year, surpasses all precedent and expectation; the receipts have exceeded £3,000 in one day, and the numbers, although fluctuating, are always large, yet the building is rarely crowded, except when there is a sudden shower of rain. One cause of this is the mass of attractions out of doors, and another, which deserves special notice, the great facility of ingress and egress by the radial avenues, or streets, as they are called, which connect the inner garden with the park; when visitors feel somewhat fatigued, and catch a glimpse of trees and grass through one of these openings, they naturally make for the open air, greatly to their own comfort, as well as that of others, and return refreshed to the study of the Exhibition itself.

## THE PARIS EXHIBITION AND TECHNICAL EDUCATION.

The following letters have been addressed to the Editor of the *Times* :—

SIR,—The correspondence which you publish on this subject involves some collateral issues which seem calculated to divert the attention from the main subject under the heading which I have put to my letter. I am not disposed either to discuss or to admit the supposition that England has been at all points distanced by France and Germany. The important point, as it presents itself to my mind, is, whether we are not allowing them to attain a very marked general advantage in one important respect—namely, permitting them, by our neglect, to surpass us in their theoretical knowledge of the materials which they use, and in the best methods of working them up, whether derived from special acquaintance with the particular art, or from general instruction in mechanism and combination of materials. If this be so—and I believe it is—no man who values his time will care to discuss whether we can compete with the foreigner notwithstanding. We must surely compete upon better terms if we can escape the disadvantage.

I have just revisited Paris after twenty-two years' absence from it. During the past twenty years I have been officially connected with education in England, and have for some time been engaged in the actual teaching of what the French call a special application. I thus had strongly impressed upon me both the alteration

which has taken place here since 1845, and the comparative difference between the two countries; and I have thought you might like that I should give you my impressions.

In the first place, I find that the French have made immense advances in the application of small mechanism to the necessities of every-day life, and that they are now as far in advance of the English in this respect as we were beyond them in 1845. This is only one indication among many that there has been a general advance of this kind of knowledge; but I find something more in my observation of the people. I find them better disciplined, more attentive to small things, more alive to the necessity of applying their intelligence to detail, and better taught how to apply it. In the higher respect of pure mechanism I find that their detail occasionally errs in being too elaborate, but never from want of calculation or neglect of care. I find also that they are far more accustomed to submit, not only their main intention, but also their subordinate detail, to the test of exact or approximate numerical calculation, than is at all common with any but a few of our best mechanical designers. Lastly, I find that this is the result of a systematic plan of technical education pursued in France for now three-quarters of a century, in spite of war and revolution. This system is now bearing year after year increased fruit, and there is scarcely a large business in France in which the whole of the scientific knowledge bearing, even collaterally, on the subject is not fairly understood and mastered by those directly concerned in the business.

In England it is not a common thing to find theoretical knowledge combined with practical work. Practical mathematics are especially rare. There is nothing like the familiar habit which one sees every day exemplified here of working out every detail of mechanism or a chymical process by actual calculation and working diagrams. Some will say, doubtless, that we English do not need all this; for it is only the educated man who is capable of seeing how far his knowledge is deficient. But I have yet to learn that there is such a difference between man and man that any nation can afford to throw away the advantage of superior information.

Yet that is just what we shall do unless we take up vigorously and earnestly the work of technical instruction. There is a time in the military history of nations when individual prowess is sufficient to procure national supremacy; and there is a time in industrial progress when isolated energy and perseverance will secure manufacturing predominance. But there is a time in both when discipline and systematic training become necessary for the people to secure their position among nations; and that time, as I think, is now at hand for us.

It is quite true that our Universities teach mathematics in a way with which I should be the last to find fault, considering the purpose for which they are intended. But that purpose is wholly apart from the practical applications needed by the middle classes, and it is diverging more and more from what is chiefly useful to them. It is geometry rather than Euclid that they want, and it is mensuration rather than mathematical logic, which is of use to them. The middle classes cannot afford to spend their adolescence in an education which only opens the gate of knowledge; their instruction must be practical from the first, and there is no real impossibility in combining that accuracy of deduction, without which mathematics cease to be an exact science, with practical rather than logical applications.

I have no right to constitute myself the exponent of Lord Granville and Dr. Lyon Playfair, but as I read their letters their main object seemed to me to be to call attention to the disadvantages under which we lay from this want, which unquestionably exists among us, of technical instruction, and to the serious consequences which had already accrued, and were likely to be increasingly felt from this cause. It is putting the ques-

tion on a false issue to answer them as if their object were a mere comparison of our existing manufactures. In so far as my own limited experience is concerned, both of men and of mechanism, of students and teachers, I do not think that they have exaggerated in any way the danger.

At the same time I have no fears for our country, provided we really, as a nation, recognize the need, and apply ourselves to the remedy. But it must not be supposed that we have a light task before us. Our teachers, as well as our schools, have yet to be produced.

I have, &c.,

CHARLES W. MERRIFIELD, Principal of the  
School of Naval Architecture.

Paris.

SIR,—The expression, "technical education," has recently appeared in your columns, but without any precise definition. What is "technical education?" Let me try to answer that question by giving an illustration drawn from a particular department of manufacturing art to which I have especially devoted my attention during the last five-and-twenty years, and during sixteen of which I have been engaged in the work of instruction connected with that department. It is necessary that I should make this statement, because certain of your correspondents on the subject have sought to gain the ear of the public by announcing their own more limited experience as teachers of what they designate "a special application." In the extraction of iron from its ores a series of processes is resorted to with which many of your readers are familiar. First comes that of smelting, which consists in exposing the ore in admixture, say, with limestone, to a high temperature in a gigantic furnace urged by powerful blasts of air injected near the bottom. The fuel may be charcoal, coke, or coal, and in every case it is in direct contact with the ore and limestone. The products are what is known as pig or cast iron, and a more or less glass-like substance, known as slag or blast-furnace cinder. This cast iron is not pure iron, but is compounded of pure iron and carbon, with the addition, it may be, of silicon, sulphur, phosphorus, manganese, and other matters. Next follows the process of puddling, whereby this easily fusible non-malleable, non-ductile, unweldable metal is converted into the difficultly fusible, malleable, ductile, weldable metal wrought iron, or that variety of iron in commerce which most closely approximates to the chymically pure metal; or, in the case of suitable kinds of pig iron, the Bessemer process may be adopted as a substitute. Lastly come the processes by which steel may be derived, either directly or indirectly, from cast iron. Now, Sir, all the processes which I have thus briefly referred to may be, and are, successfully carried on by men wholly ignorant of the chymical differences between wrought iron, steel, and cast iron, and of the chymical phenomena which occur in those processes. Such men have a merely empirical knowledge of the metallurgy of iron, acquired by tradition and the education of both eye and hand. But the man who knows the essential nature of wrought iron, steel, and cast iron, and who is acquainted with the chymical changes that are made in the process of smelting, and in the other consecutive processes, has a scientific knowledge of the subject. It is only this latter branch—that is, the principles of this manufacturing art—that can form the subject of instruction at metallurgical or mining schools. The knowledge of the other, or practical branch, can only be acquired at iron-works. That a knowledge of the principles of this art may lead to improvement and to great practical results could easily be demonstrated by numerous examples—examples, indeed, so numerous, that I would undertake to fill six columns of the *Times* with the record of them. Let it not be supposed that no technical instruction has been provided in England in the great subject of metallurgy and the

kindred arts, and instruction, too, provided by the Government. Not many years ago, notwithstanding the prominent position which Great Britain then held among the iron-producing nations of the world, scarcely a chymist could be found in any ironwork in the kingdom, and such a thing as an analysis of an iron ore or of iron was hardly ever thought of. What is the fact now? Why, the absence of an expert chymist from a great ironwork is the exception, and not the rule. I could supply you with the names of able chymists thus scattered through our ironworks. And what is true of iron-work is equally true of other branches of practical metallurgy. During the last few years I have had the opportunity of seeing the examination papers on metallurgy of working men, sent to the Science and Art Department at South Kensington, from various parts of the United Kingdom, and I say with confidence that at least in that branch much progress has been made in the diffusion of "technical education." The press, also, has done, and is doing, great and useful work in this direction. I am personally acquainted with many of our chief metallurgical works and have had ample opportunities of conversing with the working men they employ, and I have been delighted to observe their desire for knowledge concerning the principles of their art, and on many occasions how much knowledge of those principles they had obtained. It is untrue to allege that there is no technical education in England, and those who made the allegation ought to have known better. I speak of what I know respecting one great branch of manufacturing industry in this country, and I am prepared to maintain what I here assert. Do not let me be misunderstood. The value of what is called "technical education," or education specially directed to manufacturing art, cannot be overestimated. The Government has taken the initiative in this matter, and the nation has already begun to reap the advantage; and, I might say, other nations too, for I could give a list of men from the continent of Europe, from Australia, from India, from South America, and from the United States, who have received special technical education in England—nay, even in London. Let us not only go on as we have been going on during the last 15 years, but redouble our efforts if necessary. There is no ground for alarm. We cannot hope to excel in all things. It is probably not expedient that we should. There are other people in the world as wise and energetic as ourselves. But, so far as our national resources will permit, there need be no apprehension of our being beaten at least in practical metallurgy by the rest of the world.

I am, Sir, your obedient servant,

June 12.

Y.

### Fine Arts.

RESTORATION OF ANCIENT EDIFICES IN PARIS.—Visitors to Paris this year will find several interesting buildings recently restored or now under hand. The ancient priory of Saint Martin des Champs, occupied by the Conservatoire des Arts et Metiers, has been many years in the hands of the restorer, and is now approaching completion; the priory church has long been occupied by machinery in motion, but the apse, which is very fine, has only recently been restored. The outside of the church, like most cathedrals and other ecclesiastical edifices on the Continent, is masked by a row of wretched tenements, which are now being removed. Visitors who are not acquainted with Paris must not omit to visit the ancient refectory of the priory, a very remarkable building of the 13th century, attributed to Pierre de Montereau, which stands parallel to, and not far from, the inner wall of the church, and is now the library of the Conservatoire; it is a curious, long, narrow structure, with a row of columns up the centre. The restorations of Notre Dame are now entirely terminated, with the

exception of a portion of the side chapels and some subsidiary work. The whole of the main structure is restored, and the general effect is excellent. The upper floor of the beautiful *chapelle* of Saint Louis was completely restored and embellished some years ago, and the lower chapel is now in the hands of the restorers, and approaches termination. The city of Paris is occupied with the restoration of the *Hôtel Carnavalet*, which is destined to contain the museum of the antiquities of Paris. The opening up of new streets not far from the central markets, has laid bare one of the most remarkable monuments in Paris, namely, the tower of the ancient residence of the Dukes of Burgundy, built by Jean Saint Peur, which is fortunately in an excellent state of preservation. This will be a remarkable addition to the architectural antiquities of Paris, for it has been completely masked for a long period by houses, and lost to all but earnest students; it is an admirable specimen of the Burgundian architecture which is seen in such grand forms at Dijon, the capital of the once powerful Dukes of Burgundy. The city of Paris has also recently acquired the *Hôtel de Sens*, occupied in the middle ages by the Kings of France and the Archbishops of Sens, and is about to cause it to be restored.

EXHIBITION OF WORKS OF ART AT BORDEAUX.—The catalogue of this exhibition contains 588 entries, including works by Diaz, Landelle, Théodore Rousseau, and several other painters of eminence. The municipal council purchased two works by M. Dauzats and M. Chabry, both natives of Bordeaux, for the museum of the town, for 6,000 francs; the society directing the exhibition made purchases to the extent of 22,500 francs, and private amateurs to the amount of 35,000 francs, making altogether a total of £2,540.

## Manufactures.

LIEBIG'S ARTIFICIALLY PREPARED MILK.—This celebrated chemist has made a communication to the French Academy of Sciences on the subject of prepared milk. He says that the composition of milk is not uniform; the proportions of caseine, sugar of milk, and butter vary, as is well known, with the nature of the mother's food. "I take," says M. Liebig, "for the base of my composition the normal form of woman's milk, after the analysis of M. Haidlen, of Giessen, and of which 1,000 parts contain 31 parts of caseine, 43 of sugar of milk, and 31 of butter. The plastic and heat-giving substances in this milk amount to 10 in 38; in that of the cow unskimmed, as 10 to 30; and in the same skimmed, as 10 to 25. I employ for my preparation skimmed milk, wheat flour, sprouted barley, and bi-carbonate of potash. It cannot be said that starch is unfit for the nourishment of infants; but it is nevertheless true that its transformation into sugar in the stomach imposes useless labour on the organisation of the suckling; this is spared by first converting the starch into sugar, or soluble dextrine. This consideration accounts for my use of germinated barley, or malt, in my preparation; it is also important that the consistency of the mixture should be such that it can be administered by means of a feeding-bottle." The preparation of the artificial milk is thus described:—Sixteen grammes of flour are boiled in ten times its own weight of skimmed milk until the mixture is perfectly homogeneous; it is then removed from the fire, and immediately afterwards is added to it 16 grammes of the barley ground in a coffee mill, and mixed with twice its weight of cold water and three grammes of a solution of bi-carbonate of potash, consisting of 11 parts of water to two parts of the salt. After the addition of the barley and bi-carbonate, the vessel is placed either in hot water or in a warm position until the mixture shall have lost its thickness, and assumed the consistency of cream. At the end of

fifteen or twenty minutes the vessel is again placed on the fire and allowed to boil for a few seconds, after which the milk is passed through a close linen or hair strainer, in order to clear it of its fibrous matter of the barley. Before giving this milk to the child, it should, however, be allowed to stand at rest, so that the finer fibrous matter still held in suspension may subside. Milk prepared after this method contains almost exactly the same flesh-making and heat-giving substances as normal woman's milk, that is to say, 10 in 38, and after being carried to the boiling point it will keep good in summer for twenty-four hours.

GLYCERINE GLUE.—A German chemist, M. C. Puscher, has discovered that, if glue or gelatine be mixed with about one-fourth of its own weight of glycerine, it loses its brittleness, and becomes applicable for many purposes for which it is otherwise unfit. M. Puscher uses mixtures of this kind for dressing leather, preparing artificial bones, for giving elasticity to parchment and porcelain, or enamelled paper, and for book-binding. A cement composed of starch, glycerine, and sulphate of lime is said to remain plastic and adhesive, and is recommended for luting chemical and philosophical apparatus, and other similar purposes. Glycerine glue is said to possess many of the qualities of india rubber, and particularly that of erasing the marks of blacklead pencils. If wax be added to a mixture of gelatine and glycerine, and zinc yellow be used as a ground for the application of aniline red, the colour produced is said to be brilliant in the extreme.

## Commerce.

### INTERNATIONAL MARITIME EXHIBITION AT HAVRE.—

A very interesting exhibition is announced to take place at Havre in the spring of next year. The word maritime is used in the very widest sense, as will be seen by the following extracts from the classification:—The exhibition will be divided into 43 classes, in five groups:—1. All that appertains to navigation, construction, rigging, fittings, and machinery.—2. Samples of all the commodities which enter into the commerce of Havre, textiles, colonial produce, indigenous commodities, cereals, fruits and seeds; dye stuffs, fatty substances, wood, metals, &c.; one class being reserved for the exhibition of methods of packing, for which our neighbours, the French, have a remarkable superiority over ourselves.—3. Fishing tackle, apparatus, implements, and accessories of all kinds, whether relating to deep-sea, river, or shore fisheries; and plant and utensils for the preparation of fish, either on the spot where they are taken, or elsewhere.—4. Agricultural implements and produce.—5. Art as applicable to the marine, such as models and sections of vessels, &c.; and art proper, such as pictures, studies, water-colour drawings, marine photographs, &c., manuscripts, books and pamphlets relating to the history of maritime science, and treating of the importance of international maritime commerce, with a view to general progress, humane societies, &c.; aquatic sports, founded either on historical events, or fabulous and legendary subjects. The plan also includes a salt-water aquarium, on a grand and new plan, in which may be exhibited all the interesting and rare species of fish found in the embouchure of the Seine, the Channel, the North Sea, and the ocean. Yachts and pleasure-boats of all kinds are also included in the programme. All applications for space are to be made before the 1st of January, either to the direction of the exhibition at Havre, or to the agents appointed to represent it abroad. The managers have determined to charge the following fixed fees for space, to cover expenses, insurance, and surveillance. In enclosed galleries, 25 fr. per square metre, 15 fr. the half-metre, and 10 fr. the quarter metre; on the inner wall, 10 fr. per metre; in

the open air, 5 fr. per metre, or with permission to erect sheds or roofs, 10 fr. No charge will be made for pictures or other works of pure art. Books, memoirs, &c., to pay 5 fr. each, but the direction will supply the necessary book-shelves, &c. Exhibitors may either provide their own counters or stands, or the management will undertake them at the following rates:—Counters or supports, capable of carrying objects weighing up to 4 cwt., 5 fr. per metre; 3 fr. for the half; and 2 fr. for the quarter metre. Exhibitors paying more than 100 fr. to the direction will have certain advantages in the way of publicity by means of advertisement within the building itself and in the columns of the *Gazette de l'Exposition*, and other exhibitors may obtain the same advantage by the payment of 25 fr. This plan of charging, at fixed rates, for space, and other matters, is new, and may be worthy of attention with regard to local or special exhibitions where the general attractions are unlikely to promise sufficient income to cover expenses.

THE HISTORY OF BEETROOT SUGAR.—The following remarks on the above subject, says the *Toronto Weekly Leader* of May 24th, are taken from a recent pamphlet which is now attracting a good deal of interest in Canada:—In 1810, M. Deyeux, a member of a committee previously appointed by Napoleon I. to investigate the subject of the manufacture of beet sugar, made his report, and presented two loaves of sugar equal in every respect to the best sugar from the cane, but neither the percentage of sugar obtained nor the cost of production was given. Reports not well verified were published, that in Germany from 4 to 6 per cent. of sugar had been obtained. By the experiments of M. Barruel, from 50 to 60 per cent. only of juice was obtained from the beet, whereas the production at the present time is from 80 to 85 per cent. The yield of sugar was about  $1\frac{1}{2}$  per cent., while at the present time in France it is about 7 per cent.; in Germany, 8 to 9 per cent.; and in Russia, 9 to 10 per cent. The cost was nearly 30 cents. per pound, while at the present time it is about 4 cents. M. Derosne, a Frenchman, obtained in 1811 about 2 per cent. of sugar from the beet. Other experiments yielded  $2\frac{1}{2}$  per cent. A factory working 500 tons of beet in a season was considered quite extensive. There are establishments now in operation that work 60,000 tons. A rasp then worked about 3 tons per diem. Now from 150 to 300 tons a day are consumed by one rasp. In 1812 the cost of manufacturing sugar was about 9 cents. per pound. Chemical schools and imperial factories were established, and Government ordered the cultivation of 100,000 acres of beet. In December, 1814, favourable tariff duties infused new life into the industry; manufacturers introduced great improvements in their establishments, to such an extent that they obtained 70 per cent. of juice from the beet, in lieu of 50 and 60 per cent. The yield of sugar was from 3 to 4 per cent., and of molasses about 5 per cent. M. Crespel Delisse claimed that he obtained 5 per cent. sugar and 4 to 8 molasses. The cost of manufacturing was about 7 cents. per pound. From 1822 to 1830 the number of manufactories largely increased. The yield of sugar was about 5 per cent., and the cost of production about  $5\frac{1}{2}$  cents. per pound. In 1825 France produced 5,000 tons of sugar in over 100 establishments. From 1830 to 1836 great progress was made. The sugar produced was of improved quality, and amounted to about 5 per cent. of the weight of the beet worked. The introduction of steam power increased the means of production ten-fold. In 1836, 436 factories were in operation. Since 1840, the production of beet sugar in France has doubled every ten years. There were 60 manufactories of beet sugar in Austria in 1846; in 1865 the number had increased to 140. The states of the Zollverein have nearly quadrupled their production in the past 15 years, 52,586 tons having been produced in 1850, against 180,000 tons in 1865-6. The intimate relation between this branch of industry and agriculture developed itself, and there were no longer unimproved lands in the vicinity of a sugar manufactory. In the department of the North,

where the industry was most firmly established, the number of acres under cultivation in grain increased enormously, the beet pulp furnishing farmers with the means of feeding an increased number of cattle, thus providing the means of fertilising an increased amount of land. *L'Echo Agricole* says that "all farmers who obtain first prizes at the agricultural exhibitions are either sugar manufacturers, distillers, or cultivators of the beet. Those who have adopted this branch of agriculture, either as proprietors or tenants, have obtained really astonishing results. M. Vallerand, who took the first prize in the department of Aisne, bought, in 1853, a farm of 832 acres, the sales of produce of which amounted to 8,000 dollars. In 1859 it produced 41,200 dollars. M. Dargent, who took the first prize in the department of Seine Inferieure, cultivated only 50 acres. He so increased the production of this farm that he obtained 154,000 pounds, or 68 tens and 168 pounds, of beet from a single acre. The culture of the beet involved the necessity of deep ploughing, heavy manuring, and thorough weeding. The pulp from the juice extracted in the manufacture is an excellent food for cattle, the number of which has been increased in the districts devoted to that industry, from eight to ten-fold since the introduction of sugar making. The cattle furnish an immense amount of manure, which, applied to the deeply ploughed and well weeded beet lands, enhances their productiveness for the cereal crops."

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## Colonies.

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THE GRAIN PRODUCED IN VICTORIA.—At a show of grain and other produce, under the auspices of the Board of Agriculture, the grain was the best ever seen in the colony. As large prizes were offered, the wheat had to be shown in lots of 40 bushels each, and the first prize sample weighed 68 lbs. 6 oz. per bushel, the second best weighing 68 lbs. 14 oz., but it was not so clear and pure, and the third lot the same as the first. The prize barley was shown in lots of 20 bushels each, weighed from 58 lbs. 2 oz. to 58 lbs. 6 oz., and the short oats from 46 lbs. to 50 lbs. 12 oz. to the bushel.

THE EXPORTS FROM QUEENSLAND last year show a moderate increase over the previous year, the totals being, 1865, £1,153,104; 1866, £1,366,491. There was a steady progress in everything but gold dust and tallow, in which there was a small decrease. The exports of timber are much increased, and copper ore has nearly doubled in the year, the exports being for 1866, £33,918. The shipment of cotton wool increased from £12,197 to £19,618. The exports of live stock are nearly six times larger than in 1865, amounting to £38,970 in 1866.

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## Obituary.

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SIR THOMAS PHILLIPS, Q.C., was born in the year 1801, in the little mountain valley of Llanelly. His father was one of the managers of the neighbouring works, and his mother, to whose influence he was accustomed to trace much of the energetic sense of duty which characterised him, was one of the Jameses of Llangotstock, representatives of Sir David Gom. He was articled to a solicitor, and at the expiration of his articles he became partner in the firm which, under the name of Prothero and Phillips, held the leading position in that part of the kingdom. It was while he was Mayor of Newport that the disaffection in the mining districts of South Wales culminated in the Chartist outbreak of 1839, to the imminence of which he had repeatedly, and in vain, called the attention of the Government. Having obtained the assistance of 30 soldiers, under a young subaltern,

he awaited the approach of the insurgents in the West-gate Hotel, and while opening the most exposed shutter of a bow window, to enable the troops to fire, he was seriously wounded in the arm and side. After the repulse of the rioters he continued to attend to business, and his brother, the late Mr. B. Phillips, F.R.S., F.R.C.S., an eminent surgeon, saw considerable reason to dread lockjaw, but happily this did not supervene. Soon after his recovery he received the freedom of the City of London, the thanks of various public bodies, and a service of plate, and was knighted by the Queen at Windsor. He then proceeded on a tour in the East, taking with him the unfortunate artist Dadd, and on his return was called to the bar, and obtained considerable success in Parliamentary practice. He now threw himself into various public and charitable pursuits, and became an active member of the governing bodies of the National Society, King's College, the Church Institution, and other kindred societies in the metropolis. At the same period he founded a school near his colliery at County Bella, which became the model of those which have contributed largely to convert the disaffected natives of those districts into peaceful and loyal subjects. To him was mainly owing the success of Brecon College, in whose management, as well as that of many charities in the diocese of Llandaff, he took an active interest to the end of his life. He was an active member of the country magistracy, and for several years acted as Deputy-Chairman of Quarter Sessions for Monmouthshire. He became eventually a Queen's Counsel and a Bencher of the Inner Temple. Sir Thomas Phillips received a service of plate for his services as Chairman of the Committee of Creditors when the failure of the Newport banks threatened disaster to the whole neighbourhood. In July, 1860, he was elected Chairman of the Council of the Society of Arts, and served the office for three years, including the period of the International Exhibition of 1862, this being the first occasion of the Society's altering its rules with regard to the re-election of its chairman. He was again elected in July, 1866, and held the office at the time of his death. He was addressing a Committee of the House on Tuesday, May 21st, when he was struck with paralysis. He never lost consciousness, and was removed in Sir Thos. Watson's carriage to his nephew's house in Gloucester-place, where he expired on the following Sunday. His remains were removed to Llanellen, where he was buried near his father and mother. In him the poor have lost a kind and discriminating friend, and the Society a valuable and energetic supporter.

### Notes.

ROYAL ACADEMY OF SCIENCES, BELGIUM. — The Academy has issued the four following subjects, for prizes of the value of one hundred francs, to be awarded in the year 1868:—1. Examination and discussion of the methods in use to ascertain the declination, inclination, and magnetic intensity of the earth, as well as the secular and diurnal variations.—2. Discussion and improvement with respect to any important point of the theory of the form of waves.—3. A complete study of a natural organic alkaloid, containing azote and oxygen, quinine in preference to any other; the object being to elucidate the constitution of this substance, and to determine the place which it should occupy in serial classification.—4. The anatomic composition of the egg in various classes of the animal kingdom, its mode of formation, and the functions of the various parts of which it is composed. The papers to be written in Latin, French, or Flemish, and sent in before the 1st August, 1868, with name of author, in a sealed letter, to Mr. Quetelet, perpetual secretary of the Academy. It is not stated whether the prizes are offered for general competition.

### Correspondence.

OUR RIVERS AND WATER SUPPLY.—SIR,—The reported saying of a great but unlearned engineer, "that rivers were created for the supply of navigable canals," has been one of the causes of their very neglected state, for the principal object held in view in the management of our rivers has always been inland navigation and water-power, as matters of considerable importance to former generations, but now falling into disuse, and for which we of the present generation are called upon to expend large sums in order to remedy the almost irreparable injuries inflicted upon every river and its tributaries throughout the kingdom. The question of water-supply, now so much agitated, must be solved by reference to the great laws of nature, as established by infinite power and wisdom, and not by having recourse to entirely artificial arrangements, which, whatever their nature, will still further contribute to the destruction of our rivers; whereas the enactment of a simple law to prohibit, after a certain period, the existence of dams and weirs for any purpose whatever in any river or its tributaries, so that it may have a clear course from its head to the sea, will be quite sufficient for the purpose of procuring an ample supply of pure water to all the inhabitants of the land; provided, of course, that at the same time all gross town sewage and refuse of manufactories be also prohibited from defiling our river waters. The storage of winter floods and their restoration to the river during the dry months, are proceedings closely allied to the well-known system of warping, which, though it may render some lands fertile by the deposition of silt, is ruinous to the river, and is at times the cause of terrible destruction. For it is an undoubted axiom, that every drop of water lost to the river in time of flood causes a proportional rise in its bed, and consequent disastrous inundations at every extraordinary overflow. The principle of storage, so strongly recommended in the paper on the subject of "Water Supply," read at the meeting of the Society on Wednesday, the 5th instant, must therefore be condemned as not only expensive, dangerous, and inefficient, but also as certain to entail enormous future outlay in the management of our rivers, which can only be considered in one light, namely that of their being the natural drains of the country they traverse. In order to promote that object, they must be so directed as to scour out their beds as deep as possible in respect to the land. They must not be hampered with arbitrary obstructions, and must be kept in their true course by means of embankments where necessary, sufficiently high and permanent to prevent any loss of water during the time of any extraordinary flood, and excessive bends should also be obliterated by means of short cuts. If the isthmus forming the Isle of Dogs were cut through, so as to straighten the course of the river, the increased scour would in time very much lower all the sand-banks and shoals from that point to the Nore, besides affording, without cost, almost unlimited dock-room in the intercepted portion. Vested rights in dams, weirs, and locks are now nearly null and void, for the Canal Commission is in a state of bankruptcy, and was so previously to the advent of the railway system, for the inland navigation dues, like their relatives the turnpike tolls, never produced sufficient funds to meet interest, repairs, and restorations, seeing that all the locks and weirs are universally in a state of complete rottenness. In fact, application has been threatened for Parliamentary assistance, and we are to be taxed for the benefit of millers, manufacturers, and canal bargemen, over and above all costs, losses, and damages arising from the past, present, and increasing dilapidation of our rivers, both large and small. I cannot conclude without noticing the infatuation which prevails in regard to water-side premises, where you will see the pump applied to clear the basements from water after

every extraordinary tide, which happens at least twice in every year. Witness the new Palace at Westminster, and the Abbey, so built that at every high tide the basements are flooded, a situation which, in the case of the Parliamentary buildings, has added a million or two to their necessary cost.—I am, &c., HENRY W. REVELEY.  
1, Baker-street, Reading.

**WATER SUPPLY.**—SIR,—In the discussion on Mr. Bailey Denton's interesting paper, "On the Water Supply of the Metropolis," on the 5th inst., in the second part of my observations, what I meant to convey was the necessity of drainage as a preliminary to the successful culture of strong, wet lands; also that, useful as Italian rye-grass was found to be, it is a great exhauster, and where the land was not in very good heart, I had seen on three farms in different localities the succeeding crop almost a failure.—I am, &c., W. BOTLY.

Upper Norwood, June 10, 1867.

### MEETINGS FOR THE ENSUING WEEK.

- MON.....British Architects, 8.  
Asiatic, 3.  
Victoria Inst., 8.  
United Service Inst., 8½. Capt. A. Walker, "On the Dress and Equipment of the Army."  
TUES ...R. Horticultural, 3. General Meeting.  
Statistical, 8.  
Anthropological, 8.  
WED ...Meteorological, 7. Annual Meeting.  
Geological, 8. 1. Mr. S. V. Wood, jun., "Post-glacial Structure of the Thames Valley." 2. Dr. Duncan and Mr. J. Thomson, "On *Cyclo yathus*." 3. Mr. J. W. Salter, "Tracks of Pteraspis in the Upper Ludlow Sandstone." 4. Rev. J. H. Timins, "Chemical Geology of the Malvern Hills." 5. Mr. T. M. Hall, "Fossils of the North Devon Series." 6. Mr. W. R. Swan, "Geology of the Princess Islands, Sea of Marmora." 7. Dr. Collingwood, "Sulphur Springs of Formosa." 8. Mr. G. B. Stacey, "Geology of Benghazi, Barbary." 9. Dr. Haast, "Geology of Canterbury, N.Z." 10. Dr. Dawson, "New Carboniferous Mollusk." 11. Mr. E. Thornton, "Coal of Brazil."  
THUR ...Royal, 8½.  
Antiquaries, 8½.  
Linnean, 8.  
Chemical, 8. 1. Mr. Perkin, "On Derivatives of Hydride of Salicyl." 2. Dr. Philpson, "Analysis of Biliary Concretions." 3. Dr. Gladstone, "Pyrophosphoric Acid." Numismatic, 7. Annual Meeting.  
Philosophical Club, 6.  
FRI .....Royal Inst., 8. Professor Tyndall, "On some Effects of Sonorous Vibration."

### PARLIAMENTARY REPORTS.

#### SESSIONAL PRINTED PAPERS.

*Delivered on 5th June, 1867.*

- Par.  
Numb.  
177. Bill—Valuation of Property (amended).  
318. Fire Insurances—Return.  
323. Mercantile Marine Fund—Account.  
336. Electoral Statistics (Scotland)—Returns.  
337. Civil List (Ireland)—Return.  
340. Railways—Report by the Board of Trade.  
Public Petitions—Twenty-eighth Report.  
*Delivered on 6th June, 1867.*  
180. Bill—Court of Chancery (Ireland) (amended).  
182. " Pawnbroking.  
183. " Linen and other Manufactures (Ireland).  
184. " Dogs Regulation (Ireland) Act (1865) Amendment.  
310. Victoria—Correspondence.  
341. Parliamentary Boroughs and Counties—Amended Return.  
Manufactures, Commerce, &c.—Reports by Her Majesty's Secretaries of Embassy and Legation (No. 5).

### Patents.

*From Commissioners of Patents' Journal, June 7th.*

#### GRANTS OF PROVISIONAL PROTECTION.

- Belting, machine—1524—A. M. Clark.  
Boats, apparatus for lowering, &c.—1469—A. V. Newton.  
Boilers—146—W. R. Lake.  
Boilers, &c.—1467—S. Regan.  
Bottle stoppers—1437—W. D. Tate.  
Butter cases—1546—L. Slatter.

- Carriages, &c.—1441—G. Coles, J. A. Jaques, and J. A. Fanshawe.  
Cartridges—1514—A. V. Newton.  
Charcoal box-irons—1506—G. Hurdman.  
Charcoal, treatment of animal—1512—J. Stenhouse and J. Duncan.  
Cisterns, regulating supply of water to—1474—J. T. and E. J. Bland and T. Brevetor.  
Earthenware, manufacture of articles of—1538—T. G. Green.  
Fabrics, looped—1510—S. H. Foster and T. Bunney.  
Fabrics, &c., drying—1389—J. Johnson and A. Giles.  
Fibrous substances—1455—J. Denis.  
Fire extinguisher—1542—J. M. Muterse.  
Flooring—1548—G. Howard.  
Furnaces—1494—H. Chamberlain.  
Grain, &c., apparatus for landing—1540—L. Stuckenschmidt.  
Hat covers—1277—A. Brunier.  
Hides, dressing—1518—J. Collins and J. Smethurst.  
Iron ore, treating—1461—A. L. Dowie.  
Iron ores, treating—1498—E. Young.  
Lead, manufacture of white—1465—W. R. Lake.  
Lime kilns—1445—P. A. De Berenger.  
Liquids, drawing off and refining—1421—W. Sodo.  
Looms—1457—H. Peel.  
Looms—1544—T. W. Helliwell.  
Metals, boring—1550—T. Greenwood.  
Mineral substances, treating—1443—E. Edwards.  
Nail-cutting machines—1453—J. Sadler.  
Paper folding machines—1502—J. Davies.  
Paper folding machines—1536—S. and T. Atkinson.  
Photographic apparatus—1526—W. E. Newton.  
Pickers—1508—S. and G. Holt.  
Presses, arming—1504—J. Gough.  
Pressure machines—1528—A. A. Hely and J. Marshall.  
Printing machinery, intaglio plate—1447—J. M. Napier.  
Projectiles, construction, &c., of—213—T. Berney.  
Rollers, steam road—1500—D. Thomson.  
Sacks, apparatus for filling—1492—C. D. Abel.  
Sail yards—1496—E. Bond.  
Sewing machines—1451—C. E. Brooman.  
Sewing machines—1481—J. White.  
Sewing machines—1516—J. Mabson.  
Signals, railway—1471—J. L. Clark.  
Steel, manufacture of—1520—J. Hargreaves and T. Robinson.  
Telegraphic despatches, letters, &c., conveyance through tubes—1532—C. W. Siemens.  
Violet colouring matters—1433—E. Smith.  
Water closets, ships—1473—J. Sloan.  
Wheels—1439—G. Nimmo.  
Wool, washing—1477—A. H. Brandon.  
Wool, &c., machinery for combing—1435—C. Perry.  
Yarns—1431—C. Brazil and R. Grime.

#### INVENTION WITH COMPLETE SPECIFICATION FILED.

- Photographs, harmonising the lights and shades in—1593—F. B. Gage.

#### PATENTS SEALED.

- |                                 |                     |
|---------------------------------|---------------------|
| 3242. W. Warren.                | 3291. T. Berney.    |
| 3245. A. S. Stocker.            | 3353. S. Hall.      |
| 3247. W. F. Smith and A. Co-    | 3358. T. Huckvale.  |
| -ventry.                        | 3366. G. Allix.     |
| 3249. W. C. Nangle.             | 3418. A. V. Newton. |
| 3251. W. Hopkinson.             | 3429. G. Haseltine. |
| 3256. C. E. Brooman.            | 44. W. E. Newton.   |
| 3257. C. E. Brooman.            | 629. H. W. Hallett. |
| 3279. H. W. Ripley & T. Barker. | 1078. W. R. Lake.   |
| 3290. A. Woods.                 |                     |

*From Commissioners of Patents' Journal, June 11th.*

#### PATENTS SEALED.

- |                                 |                                   |
|---------------------------------|-----------------------------------|
| 3262. R. B. Boyman.             | 3342. G. B. Finch.                |
| 3264. T. Jones.                 | 3348. S. Parry.                   |
| 3268. H. Wren and J. Hopkinson. | 3371. W. Clark.                   |
| 3269. I. Baggs.                 | 3382. J. S. Benson and J. von der |
| 3274. C. Sinibaldi.             | Poppenburg.                       |
| 3281. C. C. Adley.              | 3389. J. Rodgers.                 |
| 3292. T. V. Morgan & E. Hyles.  | 177. A. Apps.                     |
| 3301. A. Rollason.              | 385. W. E. Newton.                |
| 3303. J. W. Swan.               | 842. H. Wilde.                    |
| 3307. C. E. Brooman.            | 1028. W. E. Newton.               |
| 3321. J. M. Gray.               | 1050. W. E. Newton.               |
| 3331. G. Davies.                |                                   |

#### PATENTS ON WHICH THE STAMP DUTY OF £50 HAS BEEN PAID.

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|-----------------------|-----------------------|
| 1393. W. T. Cheetham. | 1441. R. A. Brooman.  |
| 1403. W. E. Gedge.    | 1446. J. Foxley.      |
| 1407. T. Aveling.     | 1460. W. Martin, jun. |
| 1409. E. J. Hughes.   | 1463. J. G. Marshall. |
| 1436. M. Henry.       |                       |

#### PATENTS ON WHICH THE STAMP DUTY OF £100 HAS BEEN PAID.

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|----------------------------------|----------------------------|
| 1406. M. Jacoby, J. Redgate, and | 1425. J. Combe.            |
| J. Stones.                       | 1434. J. B. and J. Farrar. |
| 2052. E. T. Truman.              |                            |